In The Specification

Page 5, lines 19 - 22:

The radiation source may contain coating contacting active layer or active layer cap which reduce internal reflection losses. The preferred materials are abovementioned chalogenic glasses and polymer compounds. The coating may form ~~Veershtrass~~ Weierstrass sphere to form narrow far field pattern.

Page 10, entire page:

The uppermost surfaces of layers 62, 70 are coated by glass or compound 69 having refractive index smaller than that of 62 or/and 70 layer materials. The purpose of the coating 69 is to decrease reflection losses of hv_2, hv_3 radiation exiting the layers 62 and 70 correspondingly. The shape of the coating may be made in a such a way as to collimate radiation exiting the light source (e.g. with ~~Veershtrass~~ Weierstrass sphere). The active layer 71 is placed on top of the coating 69 in order to make optical connection to the radiation hv_2, hv_3 which passes through coating 69. The hv_2 or/and hv_3 radiation is absorbed in the subsequent active layer 71 with subsequent emission at hv_4 frequency.

By using an injector (p-n junction) material with a wide energy band gap, the efficiency of injection at high temperatures ~~in~~ is greatly increased. The apparent inefficiency caused by additional phototransformation of quanta formed in the first active layer 42 and radiated in the subsequent optically connected active layer 62 by the absorption and recombination process hvl --+ hv2, is overcome by the gain in efficiency of injection. Moreover, in most narrow band semiconductor light sources due to high electron mobility the recombination occurs in the p-type side of a p-n junction. However, p-InAs and related compositions (InAs(Sb), Iia(Ga)As, InAs(P), ...) suffer from strong Auger recombination and thus low quantum efficiency at room temperature is expected. Therefore creation of a separate active layer (first and second active layers may be fabricated separately) permits to make any desired layer doping procedure (including n-type

doping or/and rare earth gettering) without reference to parameters governed by technological process of p-n junction creation in the narrow band material. The obtained freedom in the choice of active layer parameters permits thus to design source to work effectively in the middle IR spectral range at high temperatures, and be simple and cheap to construct. The band gap energy and the thickness of each subsequent active layer relative to the previous active layer satisfy the correlations:

$$hv_{\max} \leq E_{subsequent} + E_f * k < E_{previous}$$

$$1/\alpha_{entry} \leq d \leq 1/\alpha_{exit}$$

where hv_{max} is the maximum energy for the recombined radiation spectrum in the subsequent additional active area, optically connected with the previous active layer;